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John E. Madocks

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GIFFORD, KRASS, SPRINKLE, ANDERSON & CITKOWSKI, P.C

PO BOX 7021

TROY, MI 48007-7021

EXAMINER

BAND, MICHAEL A

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/571,214	Applicant(s) MADOCKS, JOHN E.	
	Examiner MICHAEL BAND	Art Unit 1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 September 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) 6-8, 12 and 15-20 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5, 9-11, 13 and 14 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09 March 2006 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Applicant's election with traverse of Group I, claims 1-14 and Species A4 and B1 in the reply filed on 9/8/2009 is acknowledged. The traversal is on the ground(s) that a burden does not exist and the special technical of the magnetic field strength at the substrate surface is strong enough to magnetize electrons is not taught by the prior art. This is not found persuasive because for a PCT application, the Examiner does not need to show that a burden exists; only that the special technical feature is known in the art. With regards to the special technical feature being known, Yan et al explicitly and clearly states that the magnetic field is strongest at the wafer (i.e. substrate surface) (abstract; p. 2, para 0029). The limitation requiring the magnetic field strong enough at the substrate to magnetize electrons cannot be the special technical feature as this feature is not present in independent claim 15.

The requirement is still deemed proper and is therefore made FINAL.

Claims 6-8, 12, and 15-20 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to nonelected Groups and Species, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in the reply filed on 9/8/2009.

Information Disclosure Statement

2. The listing of references in the Specification is not a proper information disclosure statement. 37 CFR 1.98(b) requires a list of all patents, publications, or other information submitted for consideration by the Office, and MPEP § 609.04(a) states, "the list may not be incorporated into the specification but must be submitted in a separate paper." Therefore, unless the references have been cited by the Examiner on form PTO-892, they have not been considered.

Specification

3. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

4. The abstract of the disclosure is objected to because the length of wording exceeds the acceptable range (150 words). Correction is required. See MPEP § 608.01(b).

Drawings

5. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the

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description: V_Y , [39], [42], and [79]. Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

6. The drawings are objected to under 37 CFR 1.83(a) because they fail to show Figure 2D as described in the specification. Any structural detail that is essential for a proper understanding of the disclosed invention should be shown in the drawing. MPEP § 608.02(d). Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for

consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

7. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, 'the magnetic field passing through the substrate being at least two times stronger at the first surface than at the second surface' must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New

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Sheet” pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

8. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

9. Claims 1-5, 9-11, and 13-14 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 1 requires a substrate having a first surface and a second surface being spaced apart from said first surface, and therefore substrate, by a gap. However claim 5 requires the substrate to comprise the second surface. It is unclear how the substrate can have two surfaces that are separated by a gap. For examination purposes, the claimed second surface has been interpreted as a bottom surface of the substrate.

Claim Rejections - 35 USC § 102

10. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

11. Claims 1-5, 9-11, and 14 are rejected under 35 U.S.C. 102(b) as being anticipated by Sakai et al (US Patent No. 5,717,294).

With respect to claims 1-3, 5, 11, and 14, Sakai et al discloses a plasma process apparatus comprising a vacuum chamber [10] containing a substrate [13] having a first surface (i.e. top surface) and a second surface (i.e. bottom surface), where said first and second surface are separated by a predetermined gap and parallel (abstract; fig. 1). Since the cathode [11] is in contact with the second surface of the substrate [15] and induces a cathodic bias upon said substrate [15] via a power supply [14] (col. 7, lines 11-20), said second surface is also a cathode. Sakai et al also discloses that the power supply [14] is also connected to an anode [12] having a third surface (col. 7, lines 1-7). Fig. 1 depicts an annular magnetic assembly [30] for providing a magnetic field, where figs. 4 and 17 depict the magnetic field [51] which passes through the substrate, and therefore, the first and second surfaces (col. 8, lines 42-53). Sakai et al further discloses using a magnetic field of 120 Gauss with the target surface of the substrate (col. 9, lines 59-66), where fig. 8 depicts the magnetic field increasing by 50% or more in a (E) direction as the distance from a center of said substrate [15]. Fig. 24 further supports this by depicting the center of the magnetic field being 120 Gauss at the center with the outer edge being 250 Gauss. Thus the magnetic field has a portion provided that is at least two times stronger at the first surface (i.e. outer part of the top surface) than at the second surface (i.e. center part of the bottom surface). Sakai et al also discloses an electric field formed by power supply [14] and the magnetic field intersecting (i.e. $E \times B$) to confine (i.e. magnetize) electrons at the substrate (col. 7, lines 1-20; col. 8, lines 54-

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66), thus the magnetic field has a strength strong enough to magnetize said electrons.

Figs. 1 and 3 depict the annular magnetic assembly [30] as being a mirror magnetic field (col. 15, lines 61-67; col. 16, lines 1-10). It is expected that the mirror magnetic field generates a racetrack having a return field passing through the center of said racetrack. If not, it must be due to a claim limitation not currently present.

With respect to claim 4, Sakai et al further discloses the annular magnetic assembly [30] rotated around the vacuum chamber [10] and moved up and down by a drive mechanism [28] (fig. 1; col. 7, lines 38-44), thus there is relative movement between the substrate [15] and the magnetic field.

With respect to claim 9, Sakai et al further discloses a negative bias accumulates on the substrate [15] via power supply [14].

With respect to claim 10, Sakai et al further discloses the power supply [14] being RF power, with it also being taught that low-frequency (i.e. AC) power can be interchanged with said RF power (col. 19, lines 12-14).

Claim Rejections - 35 USC § 103

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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13. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sakai et al (US Patent No. 5,717,294) as applied to claim 1 above, and further in view of Kashiwatani et al (JP No. 09241406).

With respect to claim 13, the reference is cited as discussed for claim 1. However Sakai et al is limited in that while a substrate having a polysilicon film is present, the substrate comprising a flexible web supported by a conveyor roll is not suggested.

Kashiwatani et al teaches a plasma generating apparatus comprising a vacuum chamber containing a magnet assembly, a substrate voltage bias, a web-like substrate having a polymer film supported on a conveyor having rollers (abstract). Kashiwatani et al cites the advantage of the web-like substrate as reducing damage to the substrate, producing good thickness distribution, and enables high-speed formation (abstract).

It would have been obvious to one of ordinary skill in the art to incorporate the web-like substrate supported on the conveyor as taught by Kashiwatani et al in place of the stationary substrate of Sakai et al to gain the advantages of reducing damage to the substrate, producing good thickness distribution, and enables high-speed formation.

Double Patenting

14. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir.

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1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

15. Claims 1-5, 9-11, and 13-14 are rejected on the ground of nonstatutory

obviousness-type double patenting as being unpatentable over claims 20-23 of U.S.

Patent No. 6,911,779. Although the conflicting claims are not identical, they are not

patentably distinct from each other because both teach a plasma source comprising a

first and second surface separated by a gap, the second surface connected to a power

supply, a third surface connected to a power supply, a magnetic field passing through

the first and second surfaces wherein at least a portion of the magnetic field passing

through the substrate is strong enough to magnetize electrons, and an electric field that

penetrates into an electron confining region of the magnetic field.

Conclusion

16. The prior art made of record and not relied upon is considered pertinent to

applicant's disclosure. US Patent Nos. 4,842,683; 5,707,486 teach a plasma apparatus

having a cathode, an anode, and a substrate connected to a power supply but do not

specify the interaction of the magnetic field with the substrate.

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17. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Band whose telephone number is (571) 272-9815. The examiner can normally be reached on Mon-Fri, 9am-5pm, EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Alexa Neckel can be reached on (571) 272-1446. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

18. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/M. B./

Examiner, Art Unit 1795

/Jennifer K. Michener/

Supervisory Patent Examiner, Art Unit 1795